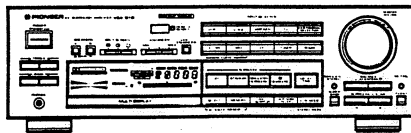




PIONEER
The future of sound and vision.

Service Manual



ORDER NO.
ARP1466

AV DIGITAL SURROUND AMPLIFIER

VSA-910

VSA-700

MODEL VSA-910 and VSA-700 COMES IN FOUR VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Applicable model		Power requirement	Export destination
	VSA-910	VSA-700		
KUC	○	—	AC120V only	U.S.A and canada
H	—	○	AC220V, 240V (switchable)	Italy
SD	—	○	AC110V, 120V-127V, 220V, 240V (switchable)	Kingdom of Saudi Arabia and general market
SD/G	○	—	AC110V, 120V-127V, 220V, 240V (switchable)	U.S military

- This service manual is applicable to the KUC, H, SD and SD/G types.
- As to the H, SD and SD/G types, please refer to pages P46~P48
- Ce manuel pour le service comprend les explications en français de réglage. (P39)
- Este manual de servicio trata del método ajuste escrito en español. (P40)

CONTENTS

1. SPECIFICATIONS	2	7. ADJUSTMENTS	38
2. PANEL FACILITIES	3	8. PACKING	41
3. EXPLODED VIEWS AND PARTS LIST ..	6	9. REMOTE CONTROL UNIT	41
4. SCHEMATIC DIAGRAM	9	10. IC DESCRIPTION	42
5. P.C. BOARDS CONNECTION DIAGRAM	24	11. FOR VSA-910 / SD/G, VSA-700/H AND SD TYPE	45
6. ELECTRICAL PARTS LIST	33	12. SAFETY INFORMATION	48

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan

PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.

PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada

PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium

PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911

YI © AUG.1987 Printed in Japan

1. SPECIFICATIONS

Amplifier section

[POWER IN] STEREO MODE

Continuous average power output of 100 watts* per channel, min., at 8 ohms, from 20 Hz to 20,000 Hz with no more than 0.005%** total harmonic distortion (stereo mode).

[POWER IN] SURROUND MODE

Continuous average power output of 70 watts* per channel, min., at 8 ohms, from 20 Hz to 20,000 Hz with no more than 0.005%** total harmonic distortion (front); 30 watts* per channel, min., at 8 ohms, from 20 Hz to 20,000 Hz with no more than 0.08%** total harmonic distortion (surround).

Audio section

Input (sensitivity/impedance)

PHONO	2.5mV/50k Ω
VCR 1, VCR 2, VDP/CDV, TV, DAT/TAPE 1, TAPE 2, CD, TUNER	150mV/30k Ω
POWER AMP IN: FRONT	1V/50k Ω
POWER AMP IN: SURROUND	150mV/50k Ω

Output (level/impedance)

VCR 1, VCR 2 OUT, DAT/TAPE 1, TAPE 2 REC	150mV/4.7k Ω
PRE AMP OUT: FRONT	1V/470 Ω
PRE AMP OUT: SURROUND	150mV/470 Ω
L + R OUT	1V/4.7k Ω

Damping factor (1kHz, 8 Ω) 55

Frequency response

PHONO (20Hz — 20kHz)	± 0.3 dB
VCR 1, VCR 2, VDP/CDV, TV, DAT/TAPE 1, TAPE 2, CD, TUNER (5Hz — 100kHz)	+0 — -3 dB
VDP/CDV IN $\rightarrow$ SURROUND OUT (30Hz — 7kHz)	+0 — -3 dB

(at DOLBY SURROUND)

Phono overload level (T.H.D. 0.03%, 1kHz) 150mV

Tone control

BASS	± 8 dB (100Hz)
TREBLE	± 8 dB (10kHz)
VCR noise filter	50Hz, 5kHz: -6dB/oct
Muting	- ∞
Loudness contour	+6dB (100Hz) +3dB (10kHz)

Super bass +10dB (50Hz) (VSA-910 only)

Channel separation

PHONO	65dB (1kHz)
VCR 1, VCR 2, VDP/CDV, TV, DAT/TAPE 1, TAPE 2, CD, TUNER	65dB (1kHz)

Signal to noise ratio (IHF, A network, shorted)

PHONO	83dB
VCR 1, VCR 2, VDP/CDV, TV, DAT/TAPE 1, TAPE 2, CD, TUNER	98dB

Signal to noise ratio [EIA, at 1W (1kHz)]

PHONO	77dB
VCR 1, VCR 2, VDP/CDV, TV, DAT/TAPE 1, TAPE 2, CD, TUNER	79dB

Speaker load impedance

A or B	4 — 8 Ω
A + B	8 — 16 Ω

Video section

Input (sensitivity/impedance)

VCR 1, VCR 2, VDP/CDV, TV, VIDEO ADAPTOR IN	1Vp-p/75 Ω
---	-------------------

Output (level/impedance)

VCR 1, VCR 2, VIDEO ADAPTOR, MONITOR OUT	1Vp-p/75 Ω
--	-------------------

Frequency response

VCR 1, VCR 2, VDP/CDV, TV, VIDEO ADAPTOR $\rightarrow$ MONITOR OUT	5Hz — 6MHz, +0 — -3 dB
--	------------------------

Enhancer (DETAIL) 2MHz, +3 — -4 dB

Signal to noise ratio 55dB

Crosstalk 55dB (3.58MHz)

Miscellaneous

Power requirements

U.S., Canadian models	AC120V, 60Hz (VSA-910 only)
Other destination models	AC110/120 — 127/220/240V (switchable), 50/60Hz

AC Outlets

U.S., Canadian models	
SWITCHED $\times 3$	TOTAL 300W MAX (VSA-910 only)
UN SWITCHED $\times 1$	200W MAX
Other destination models	
SWITCHED $\times 2$	TOTAL 200W MAX
UNSWITCHED $\times 1$	100W MAX

Power consumption

U.S., Canadian models	420W, 510 VA (VSA-910 only)
Other destination models	610W
In stand-by condition	5W

Dimensions 420 (W) $\times$ 124 (H) $\times$ 397 (D) mm
16-9/16 (W) $\times$ 4-3/4 (H) $\times$ 15-3/8 (D) in

Weight (without package)

U.S., Canadian models	10.7 kg (23 lb 9 oz) (VSA-910 only)
Other destination models	11.3 kg (24 lb 15 oz)

Furnished Parts

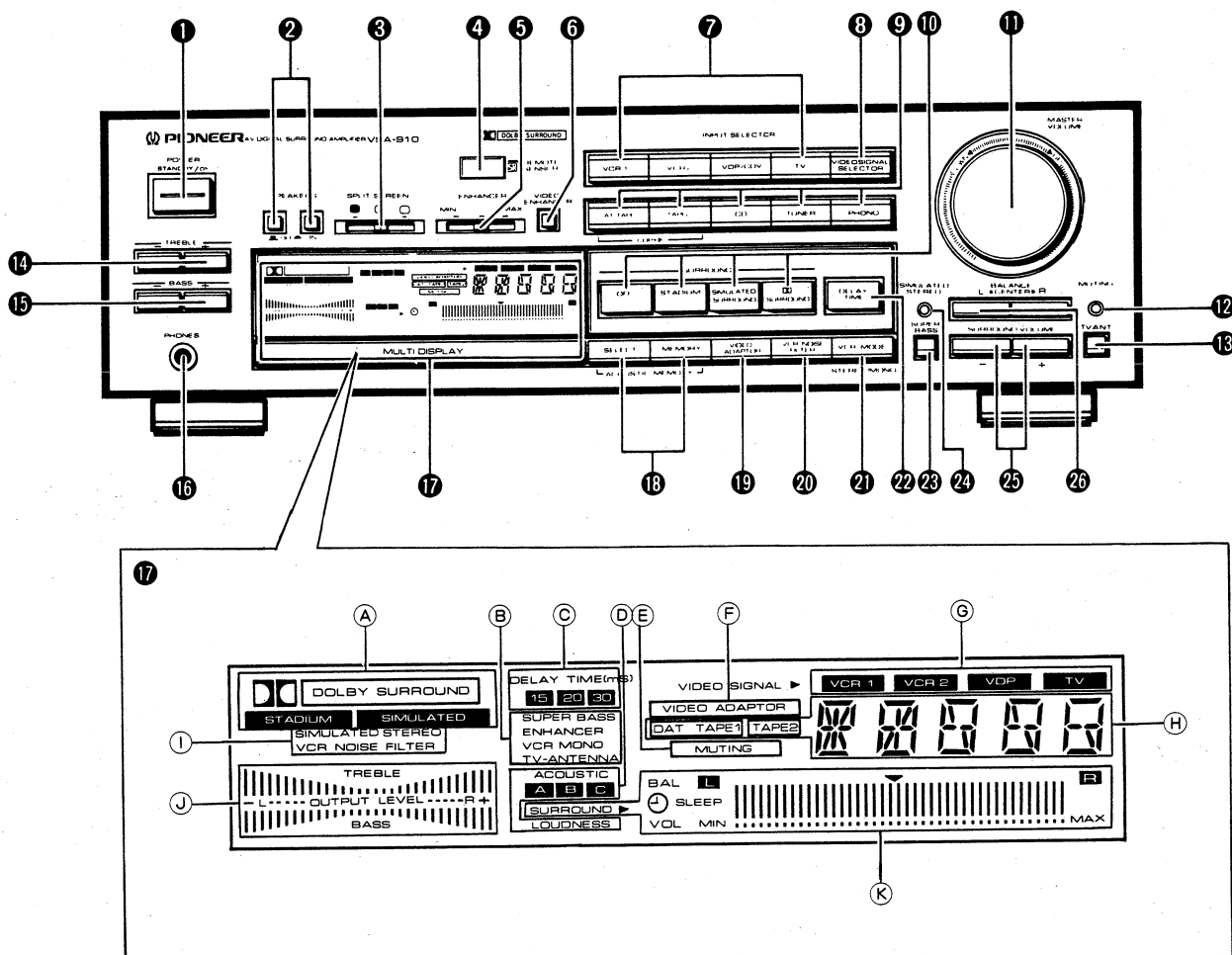
Dry cell battery	4
Remote control unit	1
Operating instructions	1
Video connection cord	1

NOTE:

Specifications and design are subject to change without notice due to improvements.

- * Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier.
- * * Measured by Audio Spectrum Analyzer.

2. FRONT PANEL FACILITIES



1 POWER STANDBY/ON Switch

To switch the unit between ON/STANDBY. When the power is turned ON, the volume indicator will flash for about 6 seconds. Press the switch again to set the unit to standby mode.

[Timer ON/OFF possible]

When the unit is switched ON, ON/OFF control can be performed by means of the optional timer.

NOTE:

When the power is turned ON, muting will be applied to prevent sound from being output while the volume level indicator is flashing (about 6 seconds)

2 SPEAKERS ON/OFF Switches

A:

Press to listen through the speakers connected to the A terminals.

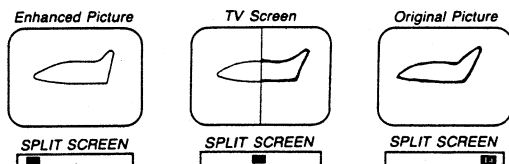
B:

Press to listen through the speakers connected to the B terminals. Surround output is sent to the SPEAKERS B terminals when the rear panel SURROUND switch is ON.

③ SPLIT SCREEN Control (VSA-910 only)

This control is used to move the boundary between the corrected video images with enhancer applied and the original video images laterally.

When turned to the left extreme only the corrected images are seen, and only the original images are seen when turned to the right extreme.



NOTE:

The picture containing both the original and corrected images is only displayed on the screen. It cannot be recorded (only the corrected picture is recorded).

④ REMOTE SENSOR Window

⑤ VIDEO ENHANCER Control (VSA-910 only)

This is a control for correcting the contours of the image. The detail of the image is enhanced and a sharp image is obtained when turned to the right. Use this to correct video quality which has been deteriorated by dubbing, etc.

⑥ VIDEO ENHANCER Switch (VSA-910 only)

Press when performing video copying with added video enhancer effects. When the switch is pressed, the monitor video image will be the split screen picture.

⑦ Video INPUT SELECTOR Switches

VCR 1:

Press this switch when playing back a tape in the video deck connected to the VCR 1 terminals.

VCR 2:

Press this switch when playing back a tape in the video deck connected to the VCR 2 terminals.

VDP/CDV:

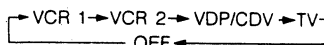
Press to watch a program from a video disc player or a video compact disc player connected to the VDP/CDV terminals.

TV:

Press to watch TV programs (reception with a TV tuner connected to the TV terminals).

⑧ VIDEO SIGNAL SELECTOR

The monitor output (TO MONITOR TV) and VCR REC output changes in the order of



each time the switch is pressed.
(The sound output is not affected.)

NOTE:

When using a VCR for sound recording only, follow the operating instructions of the VCR.

⑨ AUDIO INPUT SELECTOR Switches

DAT/TAPE 1:

Press to listen to the sound from the component connected to the DAT/TAPE 1 terminals.

TAPE 2:

Press to listen to the playback sound from the tape deck connected to the TAPE 2 terminals.

CD:

Press to listen to the playback sound from the CD player connected to the CD terminals.

TUNER:

Press to listen to AM or FM broadcasts with the tuner connected to the TUNER terminals.

PHONO:

Press to listen to the playback sound from the record player connected to the PHONO terminals.

NOTE:

The DAT/TAPE 1 signal can be monitored at the TAPE 2 REC terminals, allowing for DAT/TAPE 1, TAPE 2 dubbing.

⑩ SURROUND Mode Selector Switches

This switch operates when the SURROUND switch on the rear panel is set to ON.

OFF:

To cancel the surround function.

STADIUM:

Ideal for sports broadcasts, etc.

SIMULATED SURROUND:

Gives concert-hall presence to monaural sound (AM, TV, etc.).

DOLBY SURROUND:

Select this setting when watching video tapes bearing the DOLBY STEREO or DOLBY SURROUND mark.

⑪ MASTER VOLUME Control

Adjusts sound volume level. To adjust the balance between front and rear speakers volume for surround playback, also use the SURROUND VOLUME.

⑫ MUTING Switch

Used to temporarily mute the sound. The volume is restored when pressed again.

⑬ TV ANT Selector Switch (VSA-910 only)

Use to switch between TV reception and video playback when the optional JA-RF5 RF modulator is connected to the TO RF MODULATOR socket of this unit. This switch works only when the JA-RF5 TV ANT switch is in the VIDEO position. (There is no last memory function for the TV ANT switch. VIDEO is always selected when the power is turned on.)

TV:

TV reception is possible by the same procedure as used prior to connection with this unit.
(TV-ANTENNA indicator in the display section lights up.)

VIDEO:

In this setting, the picture from video components connected to this unit is displayed on the TV screen. However, sound is not output through the TV speakers. Use the speakers connected to this unit for sound reproduction.

⑭ TREBLE Switches

Use to adjust the high-frequency level. Press the + switch to increase high-frequency level, and the - switch to decrease it.

⑮ BASS Switches

Use to adjust the low-frequency level. Press the + switch to increase low-frequency level, and the - switch to decrease it.

⑯ PHONES Terminal

Connect the plug of a pair of headphones. When listening through the headphones only, turn both SPEAKERS switches OFF.

17 DISPLAY Section

Shows the unit condition after each switch operation.

- A Shows the surround mode.
- B Lights up, when SUPER BASS, ENHANCER, VCR MONO mode or TV-ANTENNA is ON.
- C Shows the delay time set with the DELAY TIME switch.
- D Shows the selected ACOUSTIC MEMORY.
- E Lights up when the MUTING switch is turned on.
- F Lights up when the VIDEO ADAPTER switch is turned on.
- G Shows the component selected with the VIDEO SIGNAL SELECTOR switch.
- H Shows the name of the component selected with the INPUT SELECTOR switches.
- I Lights up when the SIMULATED STEREO and VCR NOISE FILTER switches are turned on.
- J Normally shows left/right output level. After operating the TREBLE, BASS or ACOUSTIC MEMORY SELECT switch, it shows the TREBLE and BASS settings. After a few seconds it returns to the OUTPUT level indication.
- K Normally shows the volume/balance setting. When operating one of the SURROUND VOLUME switches with the surround function activated, it shows the surround volume. When setting the sleep timer function with the remote control unit, it shows the sleep time. When adjusting the SURROUND BALANCE with the remote control unit, it shows the surround balance setting.

18 ACOUSTIC MEMORY Switches (SELECT, MEMORY)

You can store up to three BASS and TREBLE tone settings in memory.

MEMORY:

Press this switch to store in memory.

SELECT:

Tone setting changes as follows when pressing this switch repeatedly:

→ FLAT → LOUDNESS → Memory A → Memory B → Memory C →

FLAT:

Flat tone characteristics.

LOUDNESS:

Low and high frequencies are emphasized. Use this setting to obtain a full-bodied sound when listening at low volume levels.

How to Use the Acoustic Memory

1. Choose the desired memory address (A, B or C) with the ACOUSTIC SELECT switch.
2. Adjust tone with the BASS and TREBLE controls.
3. Press the MEMORY switch. The indicator of the selected memory flashes and the setting is memorized.
 - This will store the first tone setting in memory. Repeat the procedure to store the remaining two.
 - To recall a memorized tone setting, choose the corresponding memory address with the SELECT switch.

Notes on the Memory Function

- As long as the power cord is connected to an outlet, the memory contents are retained, when setting the power switch to the STANDBY position. Even if you disconnect the power cord, the back-up condenser will supply enough power to protect the memory contents for about two weeks.
- When the memory has become erased it has to be preset again.

19 VIDEO ADAPTOR Switch

Press to play back a video source through the component connected to the VIDEO ADAPTOR terminals.

20 VCR NOISE FILTER Switch

Use this switch when playing back video tapes containing too much noise.
It functions when the VCR 1 or VCR 2 inputs are selected.

NOTE:

This function is cancelled when DAT/TAPE 1 or TAPE 2 are selected.

21 VCR MODE Selector Switch (VCR MODE)

Set this switch to ON, when using a VCR with monaural audio output.

It functions when the VCR 1 or VCR 2 inputs are selected.

NOTE:

This function is cancelled when DAT/TAPE 1 or TAPE 2 are selected.

22 DELAY TIME Switch

Switches the surround delay time in three steps.
For DOLBY SURROUND 20 mS is standard.

→ 15 mS → 20 mS → 30 mS →

23 SUPER BASS Switch (VSA-910 only)

This switch emphasizes extremely low-frequency sounds, below 100 Hz, being highly effective for surround playback. Use as desired.

24 SIMULATED STEREO Switch

This switch gives monaural sources a stereo-like effect.

25 SURROUND VOLUME Switches

These switches control the surround playback volume level of the speakers connected to the B SPEAKERS terminals. Press + to increase this level, and - to decrease it. When performing this adjustment, bear in mind the balance with the front speakers.

26 BALANCE Switches

Adjust right/left channel sound volume level.

L ... Press when right channel level is too high.

R ... Press when left channel level is too high.

Press L and R simultaneously to return balance to what is called the mechanical center.

On the Last Memory Function

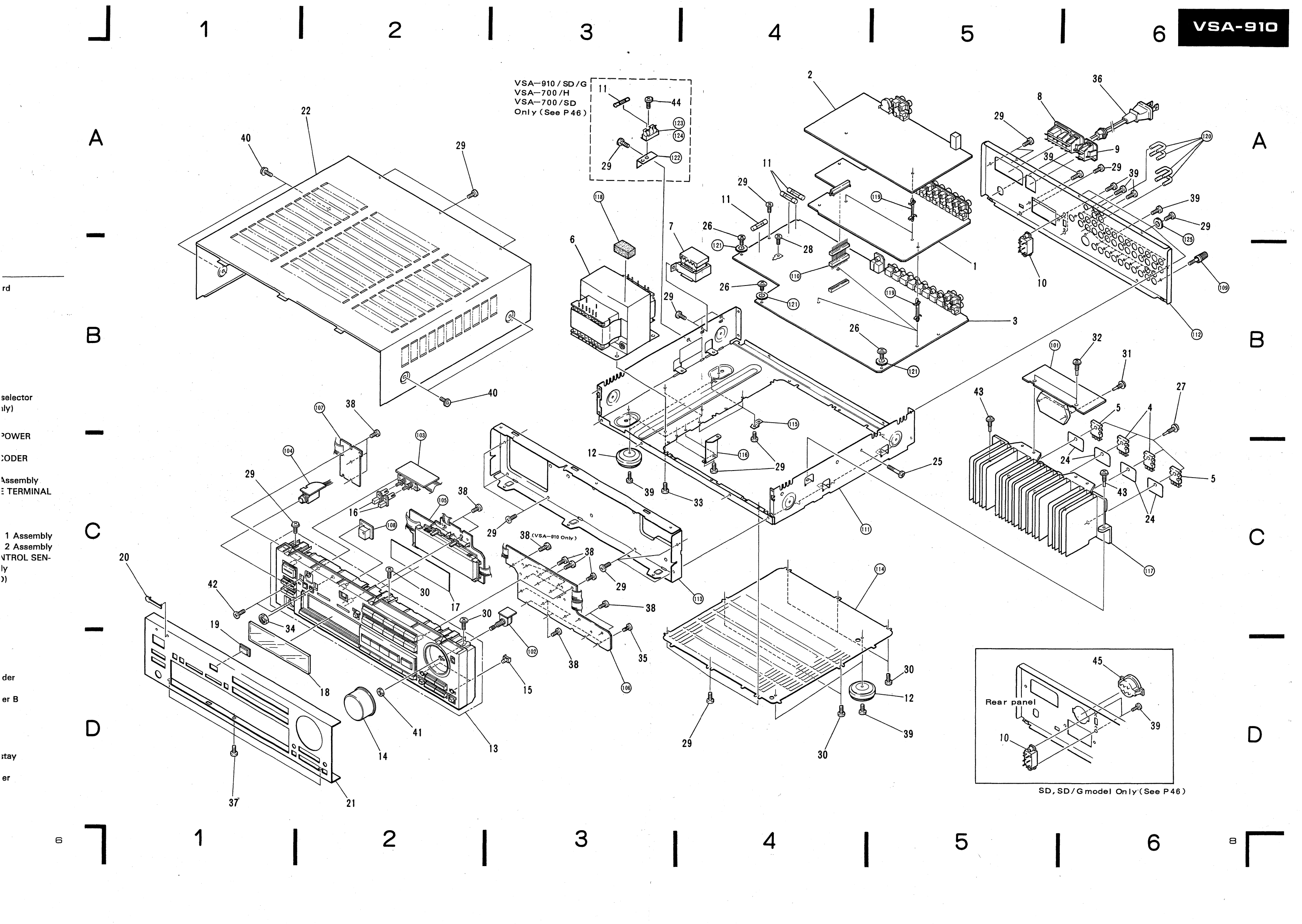
When the unit is turned on, it will be in the same operational condition that existed when it was turned off.

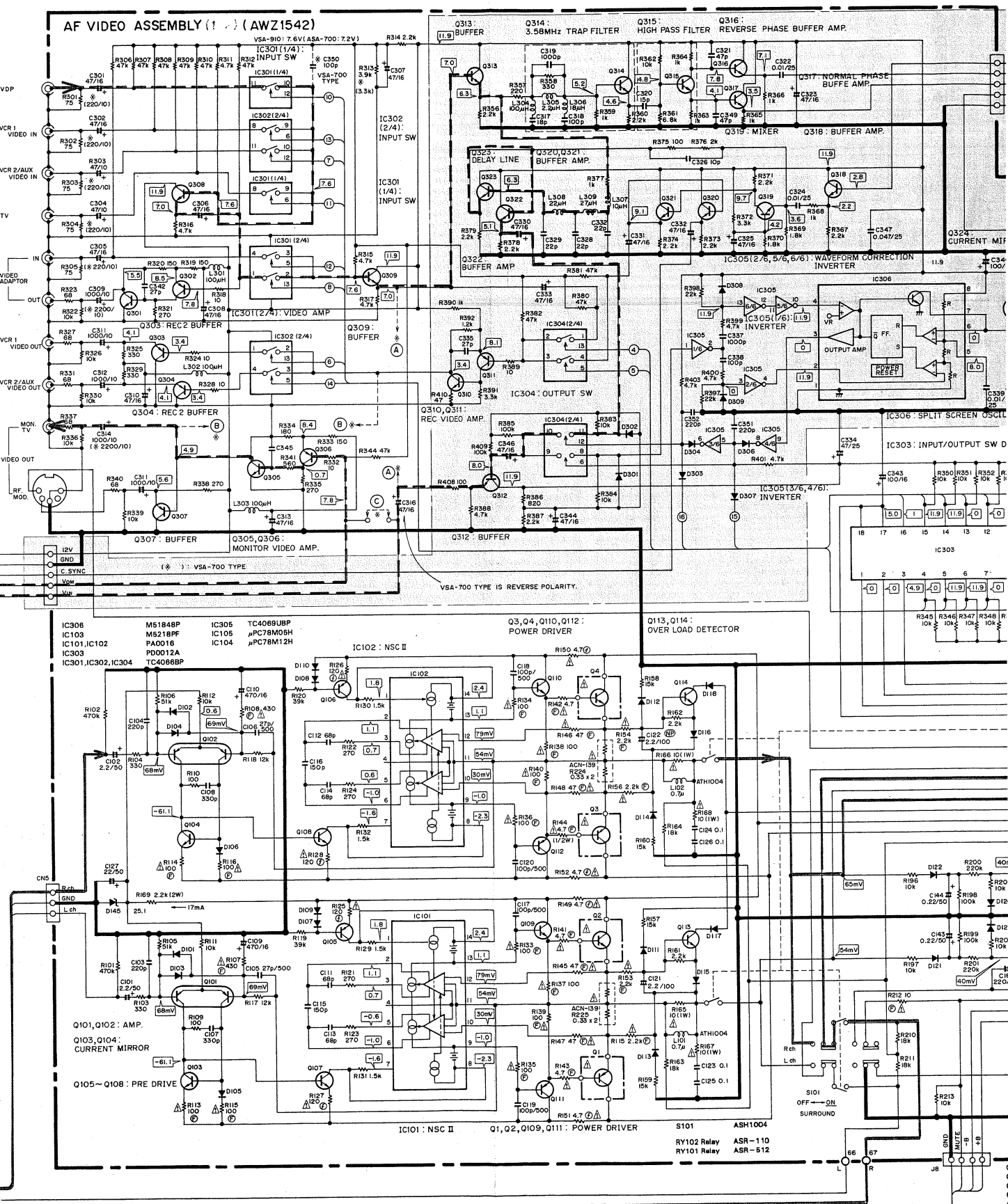
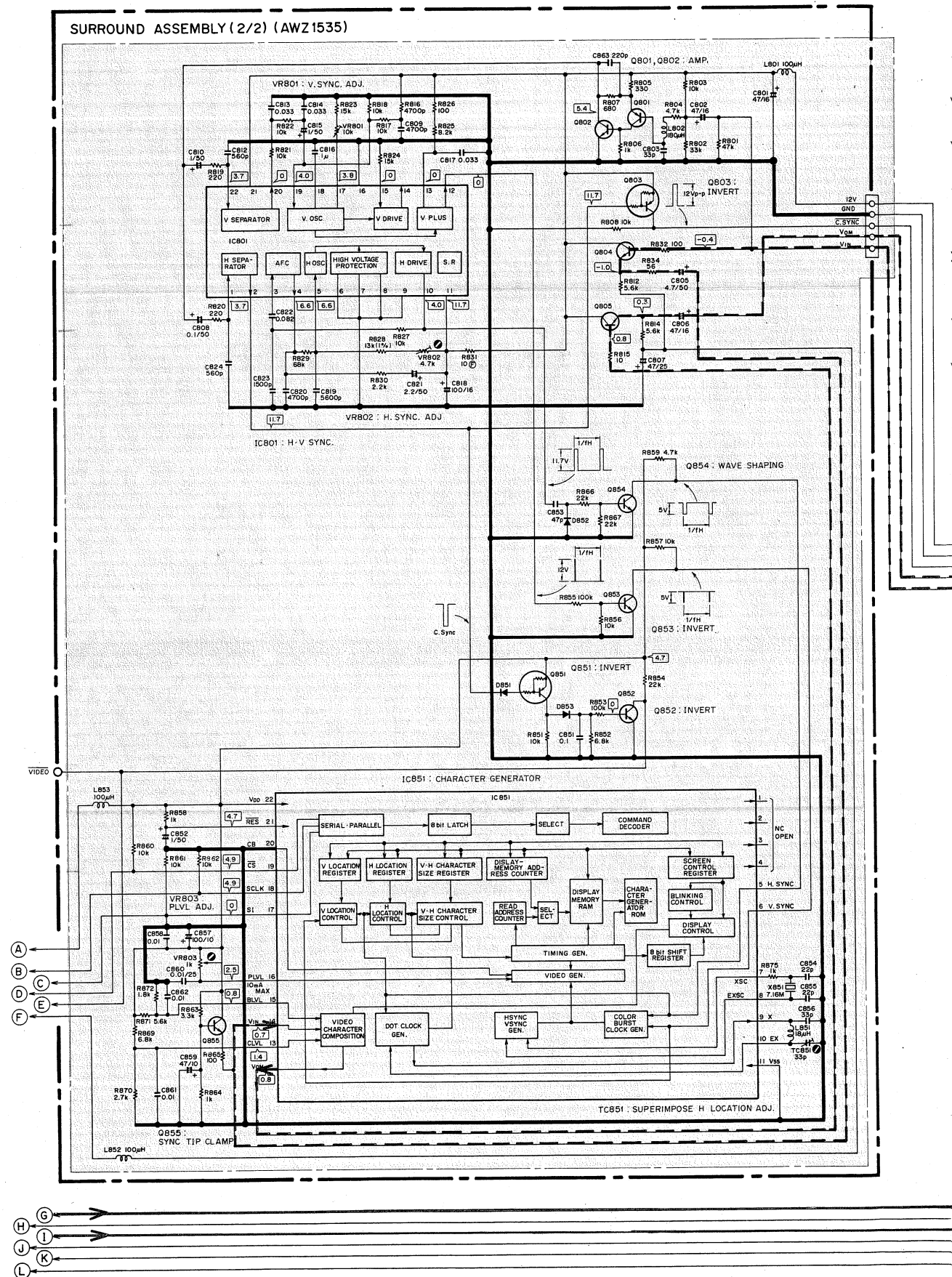
3. EXPLODED VIEWS AND PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks $\star\star$ and $\star$.
 $\star\star$ **GENERALLY MOVES FASTER THAN $\star$**
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Mark	No.	Parts No.	Description	Mark	No.	Parts No.	Description
	1	AWZ1534	LOW SIGNAL Assembly	Δ	36	ADG-089	AC Power cord
	2	AWZ1535	SURROUND Assembly		37	BBT30P080FZK	Screw
	3	AWZ1542	AF VIDEO Assembly		38	BBZ26P080FMC	Screw
$\Delta\star\star$	4	2SA1302	Q1,Q3 Transistor		39	BBZ30P080FZK	Screw
$\Delta\star\star$	5	2SC3281	Q2,Q4 Transistor		40	FBT40P080FZK	Screw
$\Delta\star$	6	ATS1105	T1 Power transformer (AC120V)		41	NK70FUC	Nut
$\Delta\star$	7	ATT1016	T2 Power transformer		42	VMZ30P060FCU	Screw
Δ	8	AKP-504	3P AC Socket (OUTLETS)		43	ABA1052	Screw
Δ	9	AKP-507	1P AC Socket (OUTLET)	$\Delta\star\star$	44	ABA-298	Screw
$\Delta\star\star$	10	AKX1004	S1 Voltage selector switch (SPEAKER IMPEDANCE)		45	AKX-507	Line voltage selector (SD/G, SD only)
$\Delta\star\star$	11	AEK-304	FU1,FU3,FU4 Fuse (8A/125V)		101		SURROUND POWER Assembly
	12	AEP-280	Leg Assembly		102		ROTARY ENCODER Assembly
	13	AMB1246	Front panel base Assembly		103		SP. SWITCH Assembly
	14	AAB1042	Knob (VOLUME)		104		HEAD PHONE TERMINAL Assembly
	15	AAD1203	Tact knob (SIMULATED STEREO, MUTING)		105		FL Assembly
	16	AAD1204	Push knob B (SPEAKER A, SPEAKER B)		106		KEY MATRIX 1 Assembly
	17	AAK1315	FL filter		107		KEY MATRIX 2 Assembly
	18	AAK1322	Acrylic Panel		108		REMOTE CONTROL SENSOR Assembly
	19	AAK1323	Fiter		109		Terminal(GND)
	20	AAM-030	Name Plate		110		Terminal 15P
	21	AMB1142	Front panel		111		Chassis
	22	ANE1043	Bonnet case		112		Rear panel
	23				113		Panel stay
	24	AEP-313	Mica sheet		114		Bottom plate
	25	ABA-176	Screw		115		PCB Holder
	26	ABA1051	screw		116		Heat sink Holder
	27	ABA-297	Screw		117		Heat sink
	28	ABA1006	Screw		118		Cushion spacer B
	29	ABA1009	Screw		119		PCB Suport
	30	ABA1011	Screw		120		Jumper plug
	31	ABA1022	Screw		121		Spacer ring
	32	ABA1027	Screw (3 x 8)		122		Fuse Holder stay
	33	ABA1031	TP screw (M4 x 8)		123		Fuse Holder
	34	ABN-065	Nut		124		1P Fuse Holder
	35	ABZ26P080FZK	Screw		125		Ring

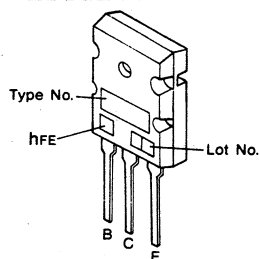




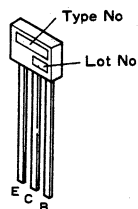


External Appearance of Transistors and ICs

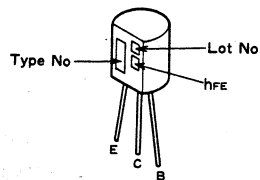
2SA1302
2SC3281



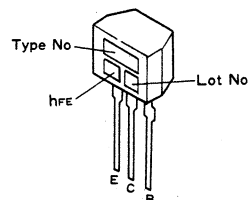
RN1201
RN1203
RN2203



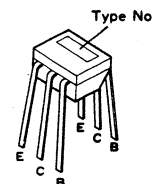
2SC2878
2SA1145
2SC2240
2SC2705



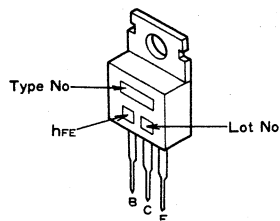
2SA933S
2SC1740S



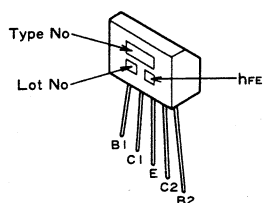
2SA1237



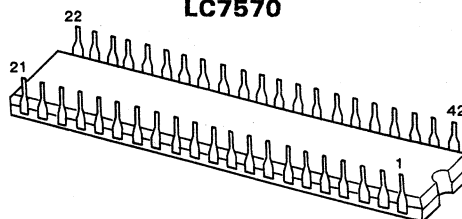
2SA968
2SB834
2SC2238
2SD880



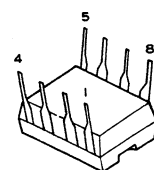
2SA979



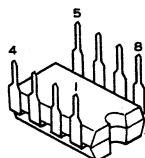
CX-789
LC7570



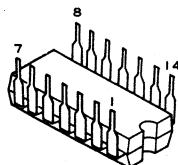
M5201



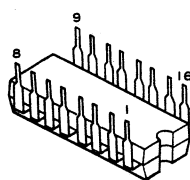
M5218PF
M5220P
M5233P
M51848P



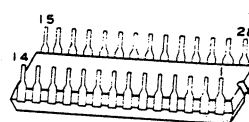
TC4066BP
LA2730
TC4069UBP
PD0016



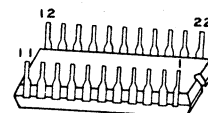
TC4572BP
CXD1120P



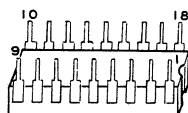
TC9163N



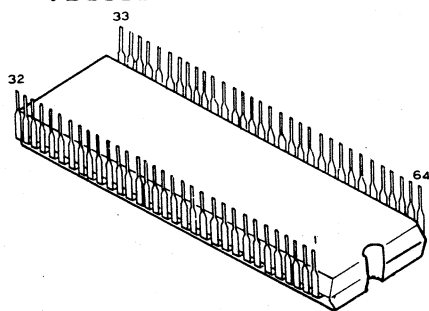
μPC1377C



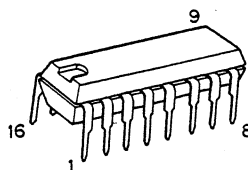
PD0012A



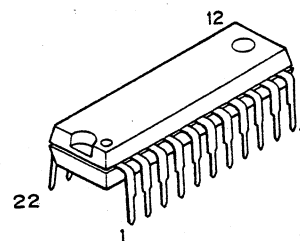
PD5059



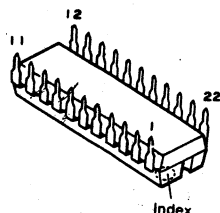
M5K4164AP



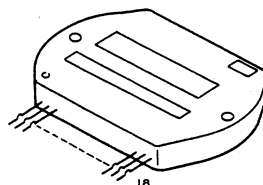
MB88323A



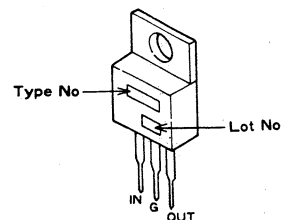
M50199P



STK4151-5G



μPC78M05H
μPC78M12H



NOTE OF SCHEMATIC DIAGRAM

1. RESISTORS:

Indicated in Ω , $\frac{1}{4}W$, $\frac{1}{2}W$, $\pm 5\%$ tolerance unless otherwise noted k: k Ω ,
M: M Ω , (F): $\pm 1\%$, (G): $\pm 2\%$, (K): $\pm 10\%$ (M): $\pm 20\%$ tolerance

2. CAPACITORS:

Indicated in capacity (μF)/voltage (V) unless otherwise noted p: pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:

 : Signal voltage at 100 W + 100 W, 8 Ω output (1 kHz)

 : DC voltage (V) at no input signal
Value in () is DC voltage at rated power.

 mA: DC current at no input signal

4. OTHERS:

 : Signal route.

 : Adjusting point.

The  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

* marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCH

OTHERS

S1: SPEAKER IMPEDANCE A, B: 4 Ω ~8 Ω 8 Ω ~16 Ω
A+B: 8 Ω ~16 Ω

AF VIDEO ASSEMBLY

S101: SURROUND OFF — ON

KEY MATRIX-1 ASSEMBLY

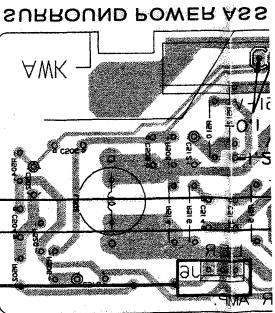
S401: ENHANCER (VSA-910 ONLY)
S402: VCR1
S403: VCR2/ AUX
S404: VDP/ CDV
S405: TV
S406: VIDEO SIGNAL SELECTOR
S407: DAT/ TAPE1
S408: TAPE2
S409: CD
S410: TUNER
S411: PHONO
S412: OFF
S413: STADIUM
S414: SIMULATED
S415: DOLBY SURROUND
S416: DELAY TIME
S417: SELECT (ACOUSTIC MEMORY)
S418: MEMORY (ACOUSTIC MEMORY)
S419: VIDEO ADAPTOR
S420: VCR NISE FILTER
S421: VCR MODE
S422: SIMULATED STEREO
S423: BALANCE L] CENTER
S424: BALANCE R
S425: MUTING— ∞
S426: SUPER BASS (VSA-910 ONLY)
S427: SURROUND VOLUME +
S428: SURROUND VOLUME —
S429: TV / VIDEO (VSA-910 ONLY)

KEY MATRIX — 2 ASSEMBLY

S430: POWER STAND — BY / ON
S431: TREBLE +
S432: TREBLE —
S433: BASS +
S434: BASS —

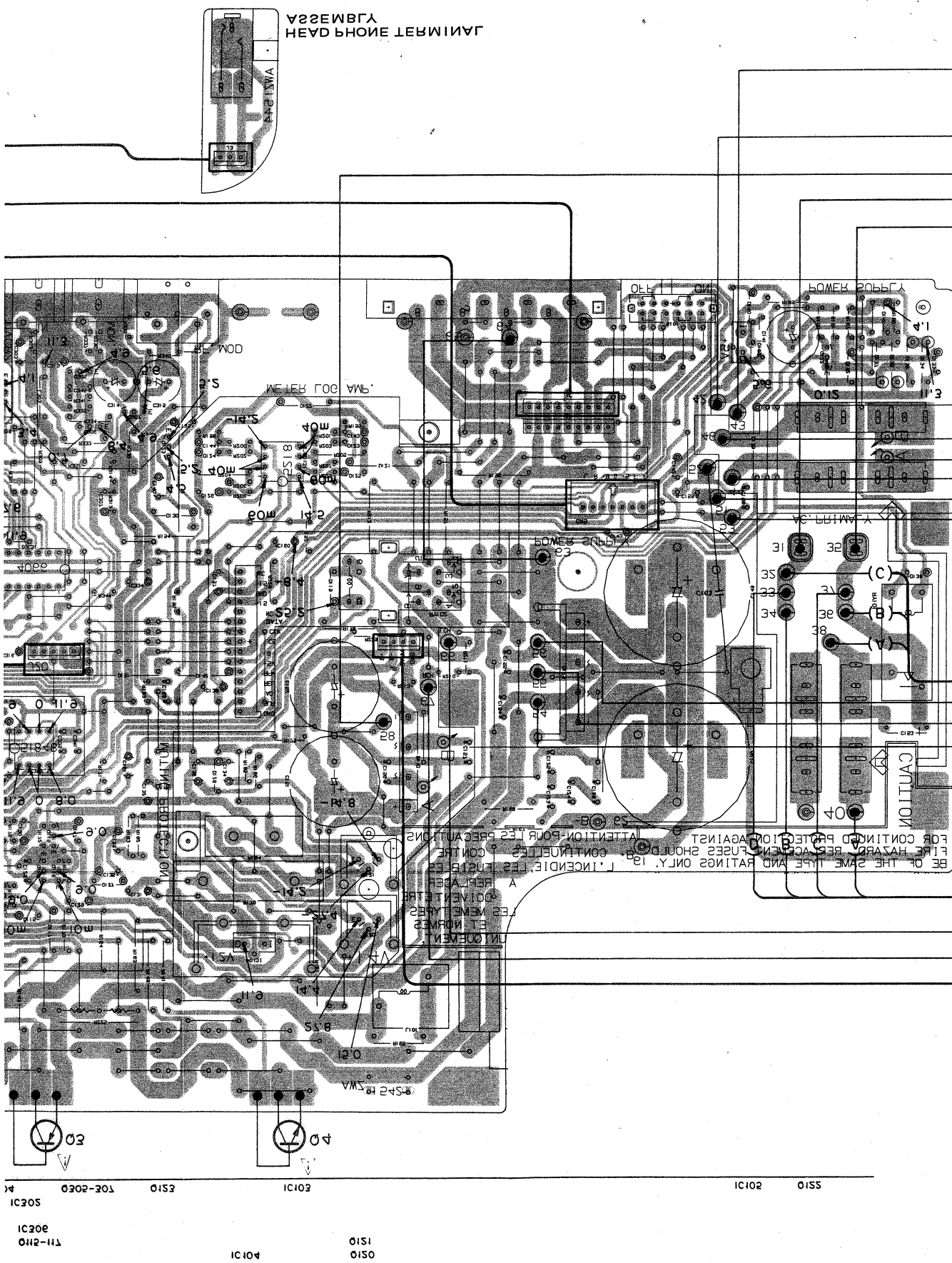
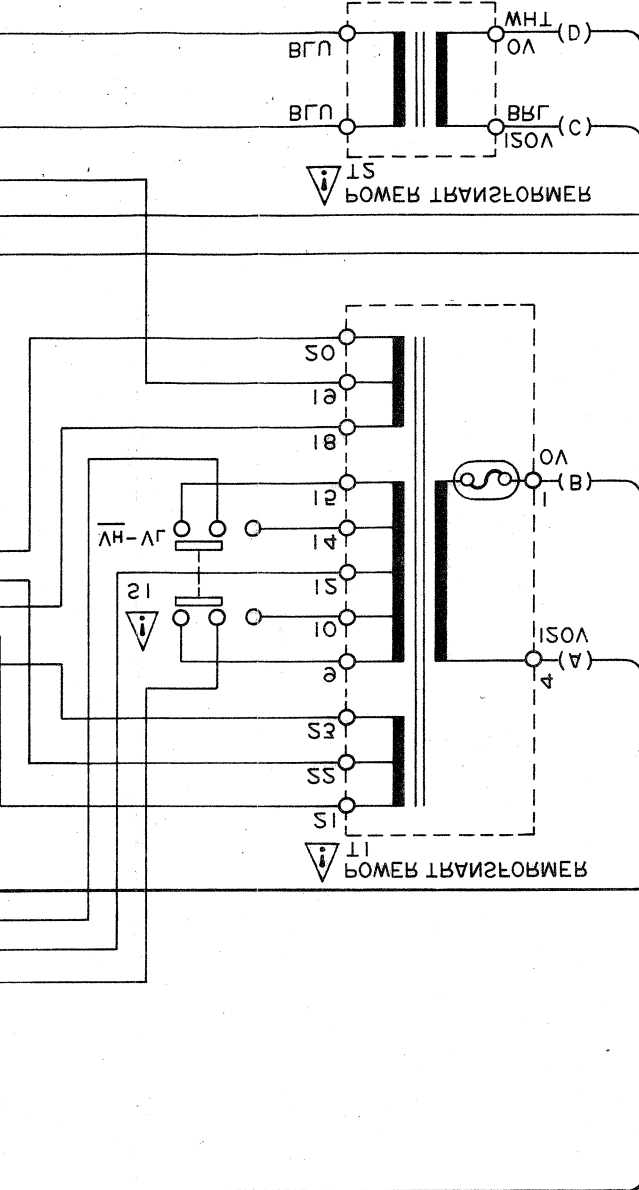
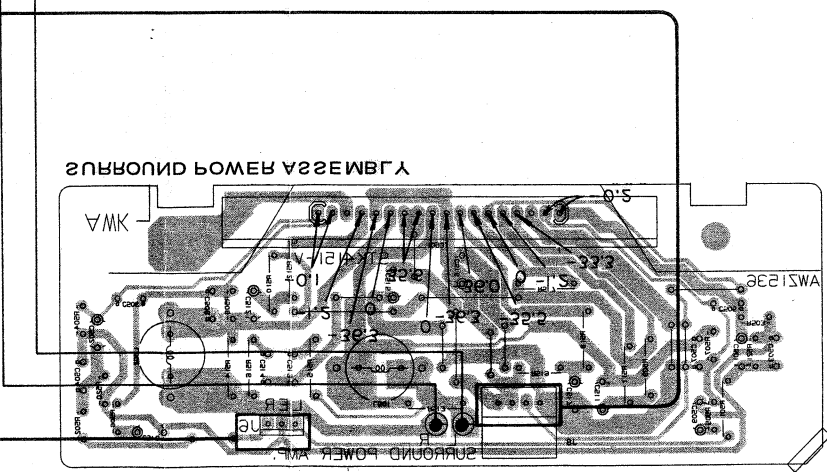
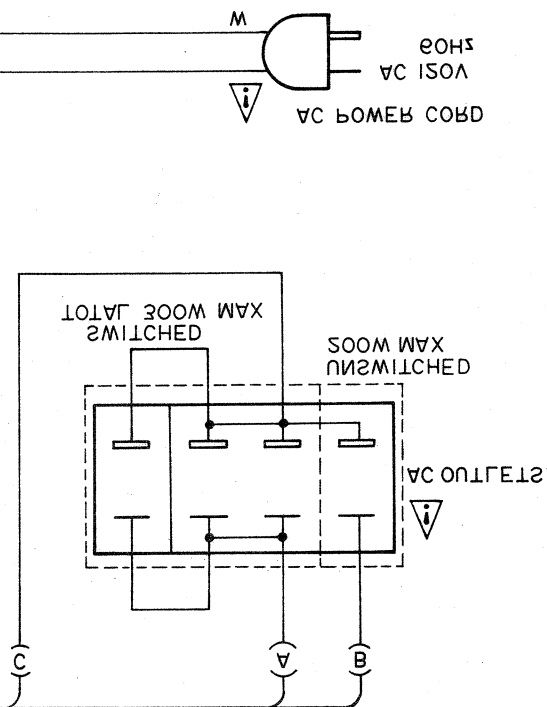
SP SWITCH ASSEMBLY

S102: SPEAKERS A ON — OFF
SPEAKERS B ON — OFF

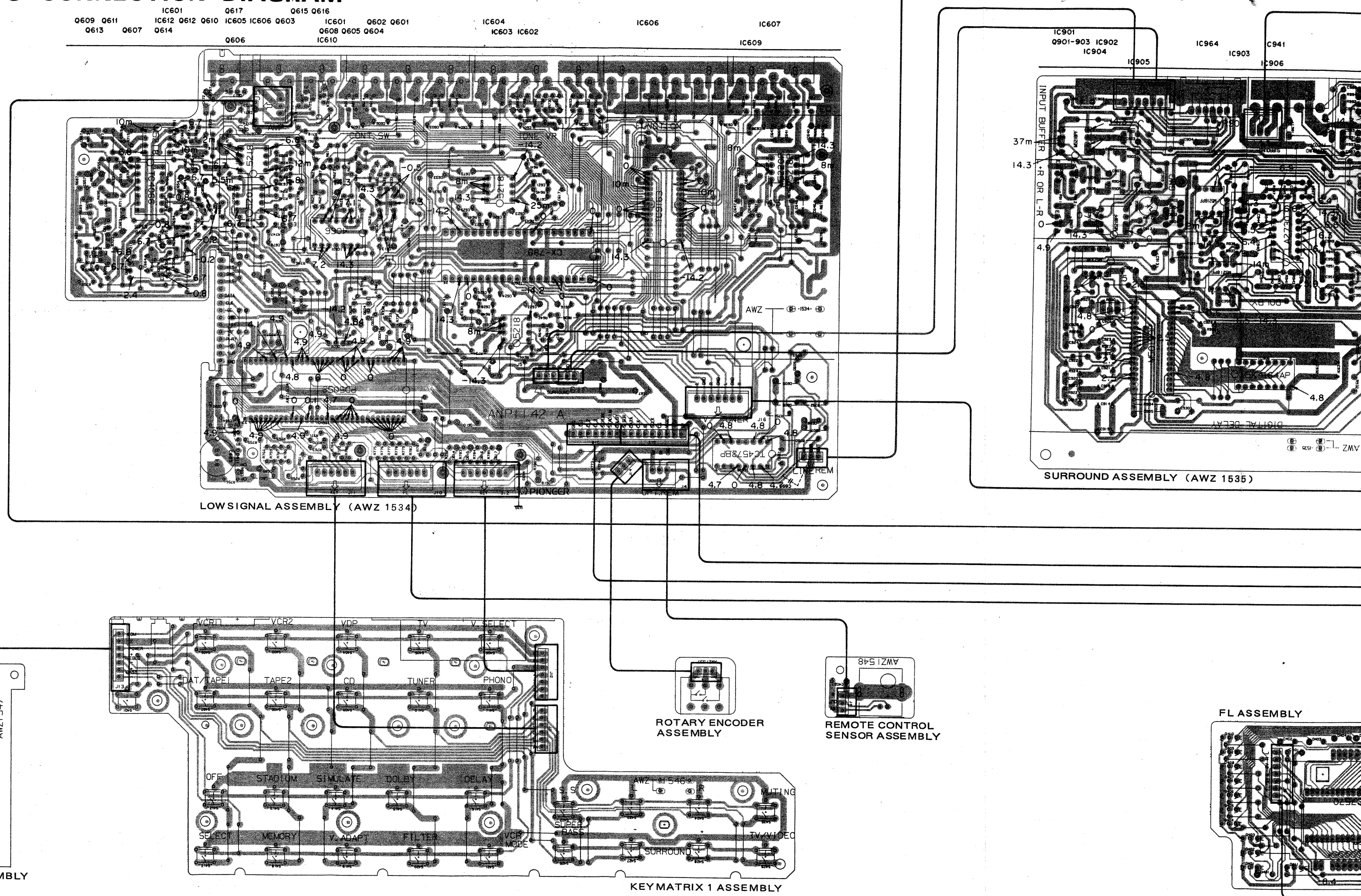


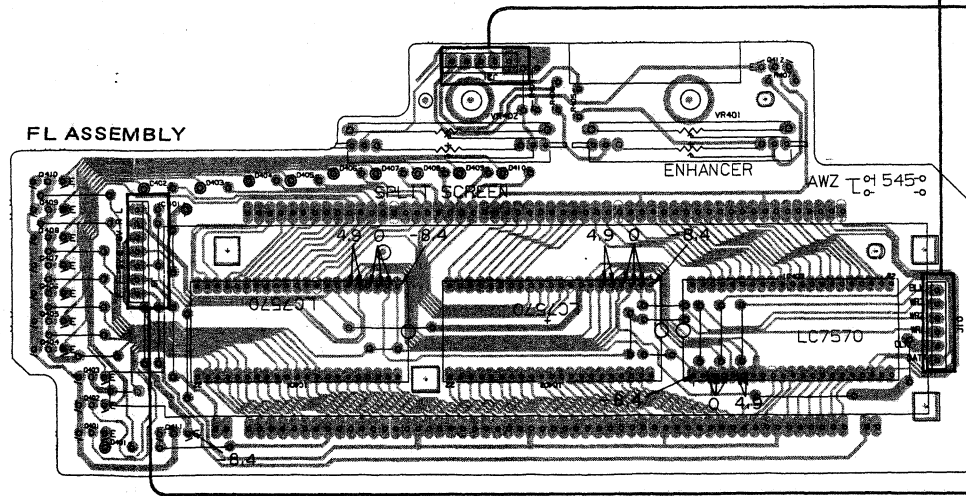
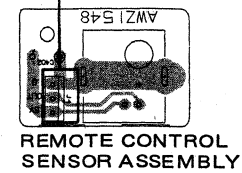
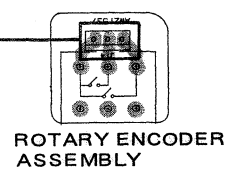
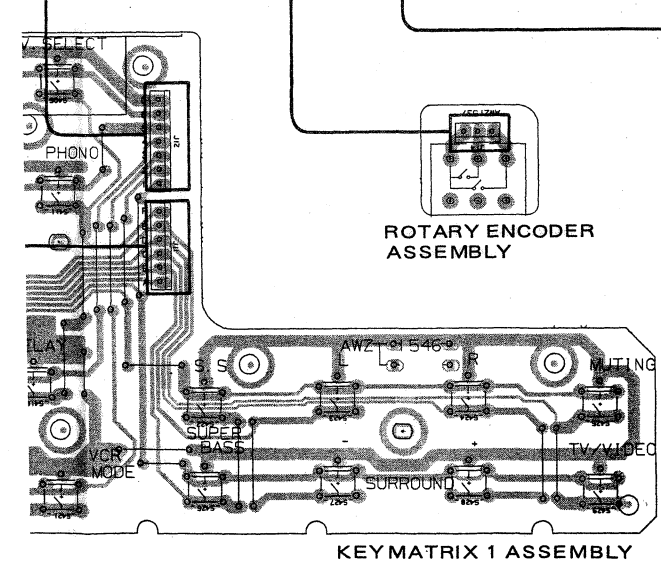
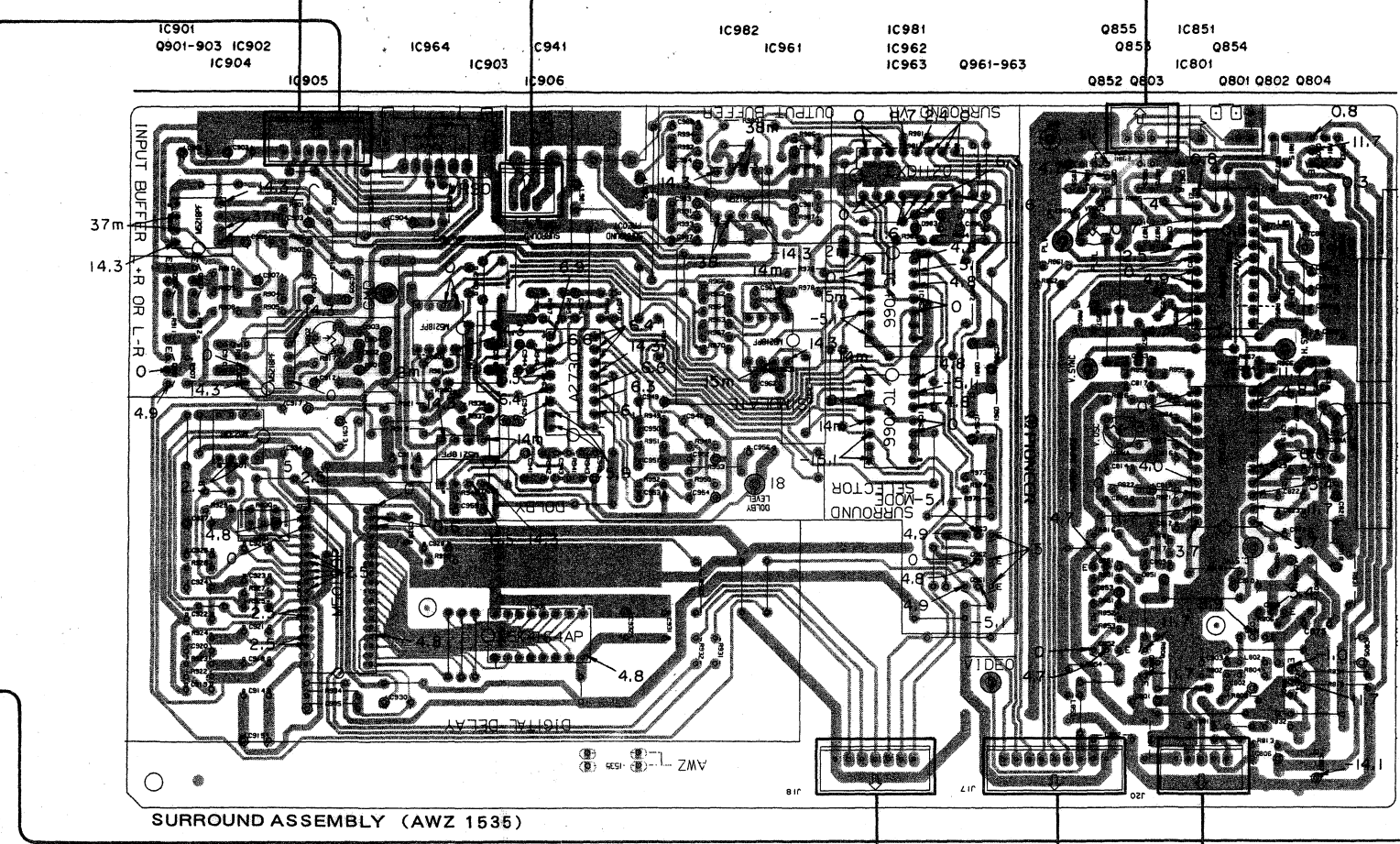
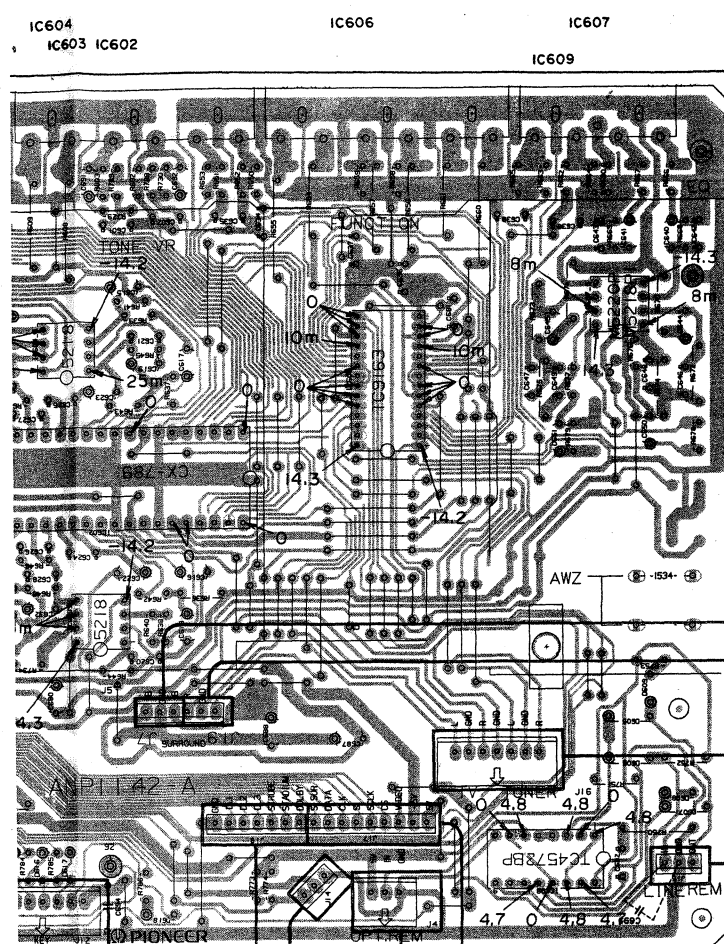
AB	2614-11060 1621101 A111916 1621101 01
E	E11161
F	0011
BA	161911
2	261101
IC	IC
B'C'B' 001101 1621101 01	

2. The transistor terminal to which E is affixed shows the emitter.
4. The diode terminal marked with $\odot$ (open circle) shows cathode side.
3. The capacitor terminal marked with $\odot$ (open circle) shows negative terminal.



5. P.C. BOARDS CONNECTION DIAGRAM





A

B

C

D

A

B

C

D

E

F

6. ELECTRICAL PARTS LIST

NOTES:

- Parts without part number cannot be supplied.
- Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.
- The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
- ★★ **GENERALLY MOVES FASTER THAN ★**
- This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	56×10^1	561.....	RD1/4PS	5	6	1	J
47kΩ	47×10^3	473.....	RD1/4PS	4	7	3	J
0.5Ω	0R5.....		RN2H	0	5		K
1Ω	010.....		RSIP	0	1	0	K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	562×10^1	5621.....	RN1/4SR	5	6	2	1	F
--------	-------------------	-----------	---------	---	---	---	---	---

Parts which are indicated by "★" are not used for the VSA-700.

Miscellaneous Parts List

P.C.BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	LOW SIGNAL assembly	AWZ1534
	SURROUND assembly	AWZ1535
	AF VIDEO assembly	AWZ1542
	SURROUND POWER assembly	
	ROTARY ENCODER assembly	
	SP.SWITCH assembly	
	HEADPHONE TERMINAL assembly	
	FL assembly	
	KEY MATRIX 1 assembly	
	KEY MATRIX 2 assembly	
	RIMOTE CONTROL SENSOR assembly	

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
△★★	Q1,Q3 Transistor	2SA1302
△★★	Q2,Q4 Transistor	2SC3281

OTHERS

Mark	Symbol & Description	Part No.
△★	T1 Power transformer (AC120V)	ATS1105
△★	T2 Power transformer (AC120V)	ATS1016
△★	AC Socket 3P (OUTLETS)	AKP-504
△★	AC Socket 1P (OUTLET)	AKP-507
△★★	S1 Voltage selector switch (SPEAKER IMPEDANCE)	AKX1004
△★★	FU1,FU3,FU4 Fuse (8A/125V)	AEK-304
△	AC Power cord	ADG-089

LOW SIGNAL Assembly(AWZ1534)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC602	CX-789
★★	IC606	M5201P
★★	IC603-IC605,*IC611	M5218PF
★★	IC607	M5220P
★★	IC610	PD5059
★★	IC601,*IC612	TC4066BP
★★	IC609	TC4572BP
★★	IC608	TC9163N
★★	Q603-Q605,*Q607	RN1201
★★	Q606	RN1203
★★	Q608	RN2203
★★	Q601,Q602,*Q609-*Q614	2SC1740S
★★	Q615-Q617	2SC2878
★	*D619	HZS9AL
★	D602-D604	RD13ESB3
★	D601	RD5.1ESB
★	D620,D621	RD6.8ESB
★	D605-D609,D612-D618	1SS131
★	D610,D611	1S1555

COIL

Mark	Symbol & Description	Part No.
	L601 Inductor (100μH)	LAU101K

CAPACITORS

Mark	Symbol & Description	Part No.
	C683	ACH1037
	C601-C606,C634-C639	CCCSL101J50
	C642,C643	CCCSL221J50
	C620,C621	CCCSL390J50
	C640,C641	CEANL100M16
	C622,C623,*C656,*C657,*C662,*C663	CEASR22M50
	*C658,*C659	CEASR68M50
	C616,C617	CEAS010M50
	C611,C689	CEAS101M10
	C618,C619,C679,C680,C685	CEAS101M25
	C607-C610,C612-615,C632,C633,C650,C651,*C654,*C655,*C666,*C667,C670-C674,C691,C692	CEAS2R2M50
	C678	CEAS330M16
	C684	CEAS4R7M50
	C652,C653	CEAS470M10
	C687,C688	CEAS471M25
	C644,C645	CEAS471M6
	C626,C627	CFTXA103J50
	C682	CFTXA104J50
	*C660,*C661	CFTXA154J50
	C624,C625	CFTXA184J50
	C646,C647	CFTXA243J50
	C630,C631	CFTXA273J50
	C676	CFTXA333J50
	C648,C649,*C664,*C665	CFTXA823J50
	C681	CKCYB102K50
	C677	CKCYF222Z50
	C695	CKDYB102K50
	C686	CKCYX223M25
	C690,C693	CKDYF473Z50
	C628,C629,C675	CQMA332J50
	*C668,*C669	CQSA101J50
	*C694	CKDYF103Z50

RESISTORS

Mark	Symbol & Description	Part No.
	R680,R681	RD1/4PM391J
	R601	RD1/4PM821J
	other resistors *(R682-R717,R721)	RD1/8PM□□□J

OTHERS

Mark	Symbol & Description	Part No.
	Terminal 4P (PHONE, CD)	AKB1033
	Terminal 6P (DAT/TAPE1, TAPE2, AUDIO IN OUT)	AKB1008
	Terminal 1P (L+R OUT)	AKB1011
	Terminal 4P (PRE AMP OUT, POWER AMP IN)	AKB1007
	X601 Ceramic resonator (8MHz)	ASS1015

SURROUND Assembly(AWZ1535)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC981	CXD1120P
★★	IC941	LA2730
★★	*IC851	MB88323A
★★	IC906	M5K4164AP
★★	IC905	M50199P
★★	IC901-IC903,IC961,IC964,IC982	M5218PF
★★	IC904	M5233P
★★	IC962,IC963	TC4066BP
★★	*IC801	μPC1377C
★★	Q901	RN1203
★★	*Q803,*Q851,Q961,Q962,Q963	RN2203
★★	*Q801	2SA933S
★★	*Q802,*Q804,*Q805,*Q852-*Q855,Q902,Q903	2SC1740S
★	D981,D982	RD12ESB1
★	D961,D983	RD5.1ESB
★	*D851-*D853,D901-D905	1SS131

COILS

Mark	Symbol & Description	Part No.
	*L801,*L852,*L853 Inductor (100μH)	LAU101K
	*L851 Inductor (18μH)	LAU180K
	*L802 Inductor (80μH)	LAU181K
	L981,L982 Inductor (8.2mH)	LTA822J

CAPACITORS

Mark	Symbol & Description	Part No.
	*TC851 Ceramic trimer (33p)	ACM-020
	*C854,*C855,C910,C961,C962	CCCSL220J50
	*C856,*C803	CCCSL330J50
	*C853,C955	CCCSL470J50
	C920	CEANP010M35
	C924	CEANP4R7M35
	C954	CEASR33M50
	*C808,*C810,*C815,*C852,C903,C904,C906,C907,C912,C913,C917,C940-C942,C944,C946,C952	CEAS010M50
	C945,C964,C985	CEAS100M50
	*C857,C934,C948	CEAS101M10
	*C818,C915,C932	CEAS101M16
	C901,C902	CEAS101M25
	*C821,C981-C984	CEAS2R2M50
	C949	CEAS220M16
	*C805,C908,C909	CEAS4R7M50
	*C859,C930	CEAS470M10
	*C801,*C802,*C806,C927,C980,C986	CEAS470M16

AF VIDEO Assembly(AWZ1542)

Mark	Symbol & Description	Part No.
	*C807	CEAS470M25
	C925	CFTXA103J50
	C921,C926,C953,*C851	CFTXA104J50
	*C816	CFTXA105J50
	*C813,*C814,*C817,C951,C956	CFTXA333J50
	C960	CFTXA683J50
	*C822,C928,C929	CFTXA823J50
	*C823	CKCYB152K50
	C943	CKCY13471K50
	*C809,*C820	CKCYB472K50
	*C812,*C824	CKCYB561K50
	*C858,*C861,*C862	CKCYF103Z50
	*C860,C914,C931	CKCYX103M25
	C987,C988	CQMA183J50
	C950	CQMA472J50
	C911,C919,C922	CQMA562J50
	C916,C947	CQMA682J50
	C918,C923	CQSA561J50
	*C819	CQSA562J50

RESISTORS

Mark	Symbol & Description	Part No.
	VR901 (SURROUND BALANCE)	ACT1030
	*VR803 (PLVL ADJ.)	VRTB6VS102
	*VR801 (H.SYNK ADJ.)	VRTB6VS103
	VR902 (DOLBY LEVEL ADJ)	VRTB6VS223
	*VR802 (H.SYNK ADJ)	VRTB6VS472
	*R831	RD1/4PMF100J
	*R828	RN1/4PQ1302F
	*R805,*R807,R972	RD1/4PM□□□J
	Other resistors	RD1/8PM□□□J
	*(R801—R804,R806,R808,R812, R814—R827,R829,R830,R834, R851—R867,R869—R875)	

OTHERS

Mark	Symbol & Description	Part No.
	Terminal 4P (SURROUND)	AKB1007
	Terminal 2P (CONTROL)	AKB1011
	X901 Ceramic resonator(3.28MHz)	ASS1016
	*X851 Crystal resonator(7.16MHz)	ASS1017

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	*IC306	M51848P
★★	IC103	M5218PF
★★	IC101,IC102	PA0016
★★	IC303	PD0012A
★★	IC301,IC302,*IC304	TC4066BP
★★	*IC305	TC4069UBP
★★	IC105	μPC78M05H
★★	IC104	μPC78M12H
★★	Q105,Q106	2SA1145
★★	*Q324	2SA1237
★★	Q118,Q123,Q302—Q304,Q306, Q307,*Q311	2SA933S
★★	Q111A/Q112A	2SA968
★★	Q101,Q102	2SA979
★★	Q121	2SB834
★★	Q305,Q308,Q309,*Q310,Q301, *Q312—*Q323,Q115—Q117, Q119, Q122	2SC1740S
★★	Q109A,Q110A	2SC2238
★★	Q103,Q104,Q113,Q114	2SC2240
★★	Q107,Q108	2SC2705
★★	Q120	2SD880
△★	D129	D5SB20
★	D120	HZS9AL
△★	D146	RBV402
★	D127,D128	RD15ESB2
★	D145	RD24EB
★	D125,D126,D141	RD4.7ESB2
★	D130	RD5.1FB2
★	D101—D119,D121—D124, D131—D133,D138—D140,D142, D143,D147,*D301—*D304, *D306—*D309	1SS131
△★	D134—D137	11E2

SWITCH-RELAIRES

Mark	Symbol & Description	Part No.
★★	S101 (SURROUND)	ASH1004
★★	RY102 Relay (PROTECTION)	ASR—110
△★★	RY101 Relay (POWER)	ASR—512

COILS

Mark	Symbol & Description	Part No.
	L101,L102 AF Choke coil(0.7μH)	ATH1004
	*L307 Inductor (10μH)	LAU100K
	L301—L303,*L304 Inductor (100μH)	LAU101K
	*L306 Inductor (18μH)	LAU180K
	*L305 Inductor (2.2μH)	LAU2R2M
	*L309 Inductor (22μH)	LAU220K
	*L308 Inductor (27μH)	LAU270K

CAPACITORS

Mark	Symbol & Description	Part No.
△	C153 Power capacitor (0.01/AC400)	ACG1002
	C154-C157 Power capacitor (0.01/AC150)	ACG1005
	C149,C150 Electrical capacitor (10000/70)	ACH1038
	C151,C152 Electrical capacitor (5600/42)	ACH1047
	*C326	CCCCCH100D50
	*C318	CCCCCH101J50
	*C317	CCCCCH180J50
	*C327-*C329	CCCCCH220J50
	C145-C148,*C337,*C338,C350	CCCSL101J50
	C117-C120	CCCSL101K500
	C345,*C320	CCCSL150J50
	C115,C116	CCCSL151J50
	C103,C104,*C351	CCCSL221J50
	*C335,C342	CCCSL270J50
	C105,C106	CCCSL270K500
	*C321,*C349	CCCSL470J50
	C111-C114	CCCSL680J50
	C121,C122	CEANP2R2M100
	C143,C144	CEASR22M50
	C142	CEAS010M50
	C140	CEAS101M10
	*C352	CCDSL221J50
	*C340,C343	CEAS101M16
	C133,C134	CEAS101M25
	C101,C102	CEAS2R2M50
	C135,C136	CEAS220M16
	*C348	CEAS220M25
	C309,C314	CEAS222M10
	C127	CEAS220M50
	C130,*C301-*C305	CEAS221M10
	C160	CEAS221M16
	C141	CEAS222M16
	C131	CEAS331M25
	C161,*C330,*C332	CEAS4R7M50
	C139,C301-C308,C310,C313, C316,*C323,*C325,*C344, *C346,*C330-*C334	CEAS470M16
	C132,C137,C138,C334	CEAS470M25
	*C309,C311,C312,*C314,C315	CEAS102M10
	C109,C110,C128	CEAS471M6
	C123-C126	CFTXA104J50
	C107,C108	CKCYB331K50
	C162	CKCYF473Z50
	C129,*C324,*C339	CKCYX103M25
	*C347	CKCYX473M25
	C158,C159	CKDYF103Z50
	*C319	CQSA102J50
	*C341	CQSA821J50
	*C322	CKDYX103H25

RESISTORS

Mark	Symbol & Description	Part No.
△	R224,R225	ACN-139
	R325,R329	RD1/2PM331J
	R107,R108	RD1/4PMF431J
△	R125-R128	RFA1/4PS121J
△	R149-R152	RFA1/4PS4R7J
△	R165-R168	RS1LMF100J
△	R178	RS1LMF331J
△	R194	RS2LMF121J
△	R169	RS2LMF222J
△	R181	RS3LMF101J
△	R184	RT5PH680K
△	R179	RT7PH470K
△	R117,R118,R101-R104	RDR1/4PM□□□J
	R189,R212,R113-R116,R133- R148,R228,R153-R156,R170	RD1/4PMF□□□J
	R109-R112,R319,R320,R333, R129-R132,R334,R338,R119, R120	RD1/4PM□□□J
	Other resistors	RD1/8PM□□□J
	*(R356-R392,R394-R401, R403,R408,R409)	

OTHERS

Mark	Symbol & Description	Part No.
	Terminal 4P (TUNER, TV)	AKB1007
	Terminal 1P (TV, VIDEO ADAPTOR, VDP/CDV, VCR1, VCR2, VIDEO OUT)	AKB1010
	Terminal 8P (SPEAKER)	AKE1008
	Terminal (5P DIN socket)	AKP-081

SURROUND POWER Assembly

SEMICONDUCTOR

Mark	Symbol & Description	Part No.
★★	IC501	STK4151

COILS

Mark	Symbol & Description	Part No.
	L501,L502 AF Choke coil(5.3μH)	ATH1009

CAPACITORS

Mark	Symbol & Description	Part No.
	C507,C508	CCCSL030C50
	C505,C506	CCCSL101J50
	C503,C504	CCCSL221J50
	C515-C517	CEAS100M50
	C509,C510	CEAS101M16
	C501,C502	CEAS2R2M50
	C511,C512	CEAS470M25
	C513,C514	CFTXA104J50

RESISTORS

Mark	Symbol & Description	Part No.
△	R509,R510	RD1/2PM222J
	R511-R517	RD1/4PMF□□□J
	Other resistors	RD1/8PM□□□J

Rotary Encoder Assembly**SWITCH**

Mark	Symbol & Description	Part No.
★★	S601 (ROTARY ENCODER)	ASX1005

SP SWITCH Assembly**SWITCH**

Mark	Symbol & Description	Part No.
★★	S102 (SPEAKER A, SPEAKER B)	SUL6LXXS

RESISTORS

Mark	Symbol & Description	Part No.
△	R226,R227	RS2LMF331J

HEAD PHONE TERMINAL Assembly**OTHERS**

Mark	Symbol & Description	Part No.
	TERMINAL (HEADPHONE)	AKN1002

FL Assembly**SEMICONDUCTORS**

Mark	Symbol & Description	Part No.
★★	IC401-IC403	IC7570
★★	Q411	RN1203
★★	Q401-Q410	RN2203
★★	*Q412	2SC1740S
★	D401-D410	1SS131

CAPACITOR

Mark	Symbol & Description	Part No.
	C401	CEJA100M16

RESISTORS

Mark	Symbol & Description	Part No.
	*VR401 (ENHANCER)	ACU1018
	*VR402 (SPLIT SCREEN)	ACU1019
	404-R407	RD1/8PM102J

OTHERS

Mark	Symbol & Description	Part No.
	V401 Fluorescent indicator tube	AAV1026

KEY MATRIX 1 Assembly**SWITCHES**

Mark	Symbol & Description	Part No.
	*S401,S402-S425,*S426, S427,S428,*S429 (*ENHANCER, VCR1, VCR2, VDP/CDV, TV, V.SELECT, DAT/TAPE1, TAPE2, CD, TUNER, PHONO, OFF, STADIUM, SIMULATE, DOLBY, DELAY, SIMULATED STEREO, BALANCE, MUTING, SELECT, MEMORY, V.ADAPT, FILTER, VCR MODE, *SUPER BASS, SURROUND, *TV/VIDEO)	ASG-711

KEY MATRIX 2 Assembly**SWITCHES**

Mark	Symbol & Description	Part No.
	S430-S434 (POWER,TREBLE,BASS)	ASG-711

REMOTE CONTROL SENSOR Assembly**CAPACITOR**

Mark	Symbol & Description	Part No.
	C402	CEJA101M6

OTHERS

Mark	Symbol & Description	Part No.
	Remote control sensor unit	AXX1006

7. ADJUSTMENTS

1. SURROUND POWER SECTION

- Set the surround balance volume (VR901) on the rear panel to the center click point.
- Set the function switch to the CD position and the DOLBY SURROUND ON.

1) Dolby Level Adjustment

- Adjust the VR902 so that the application of 1kHz and 260mV to the Lch and Rch through the signal causes the surround assembly's TP. 81 (DOLBY LEVEL) to show a DC voltage of $100\text{mV} \pm 5\text{mV}$.

2. SUPERIMPOSE SECTION (VSA-910 only)

1) Adjusting H. SYNC and V. SYNC

- Adjust the VR802 so that the application of power without any signal causes the surround assembly's TP (H. sync) to show a frequency of $15.75\text{kHz} \pm 50\text{Hz}$.
- Adjust the VR801 so that the application of power without any signal causes the surround assembly's TP (V. sync) to show a frequency of $53\text{Hz} \pm 1\text{Hz}$.

2) PLVL Adjustment

- Display superimposed characters after the color of the monitor screen changes to blue. Adjust the PLVL (VR803) so that the character level is 85 ± 5 IRE and the horizontal synchronous level is 40 ± 5 IRE. (refer to Fig.1)

NOTE: $140\text{IRE} = 1\text{V}$

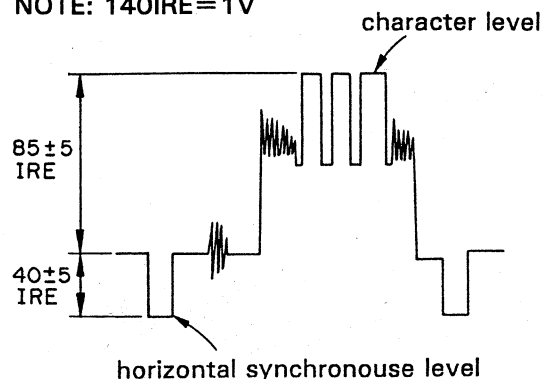


Fig.1

3) Adjusting the Superimposed Display in the Center

- Apply a crosshatching signal to the superimposing unit through the TV (VIDEO IN) terminal and press the BALANCE key or TONE key (TREBLE or BASS). Then adjust the TC851 to adjust the superimposed display output through the VIDEO OUT (TO MONITOR TV) terminal in the center of the screen so as to obtain equal margins on the right and left (refer to Fig. 2).

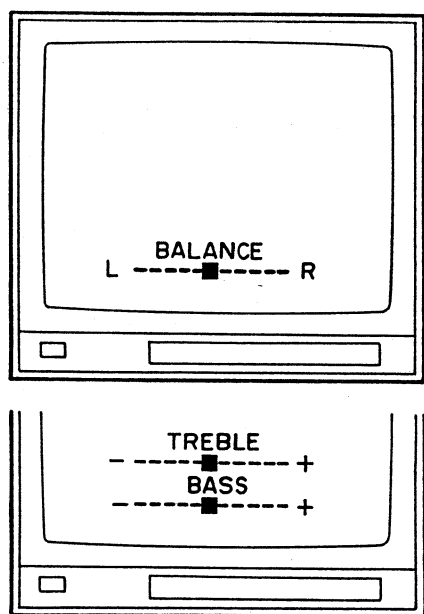


Fig. 2

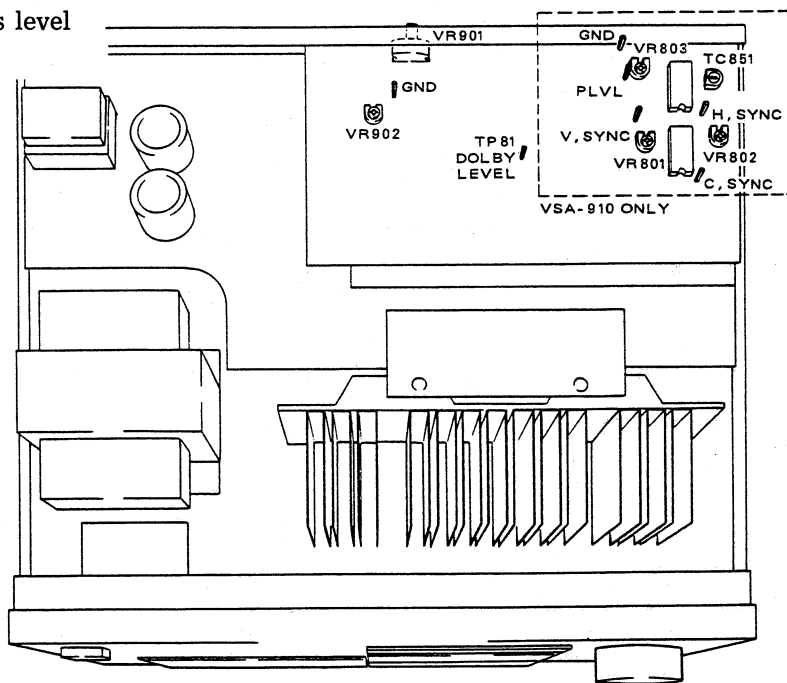
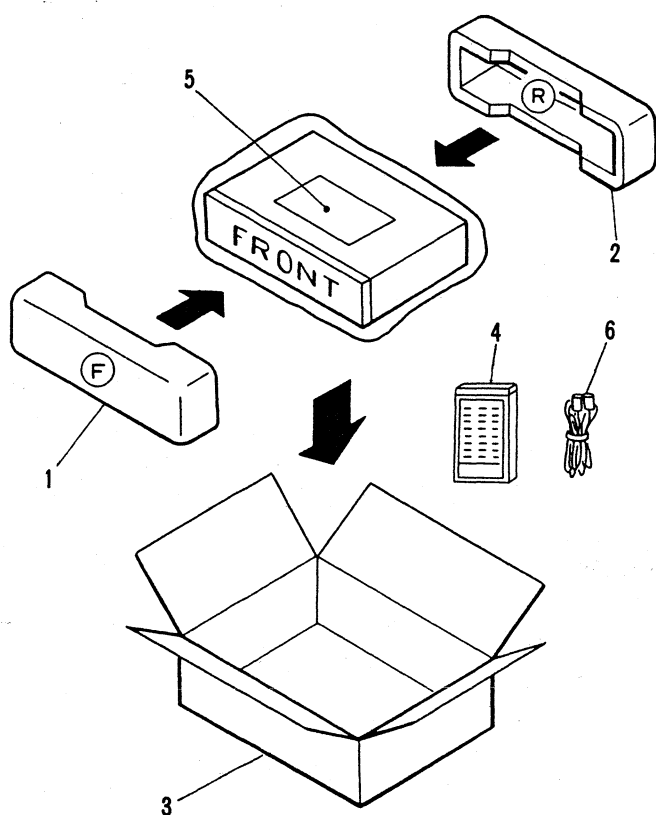


Fig. 3

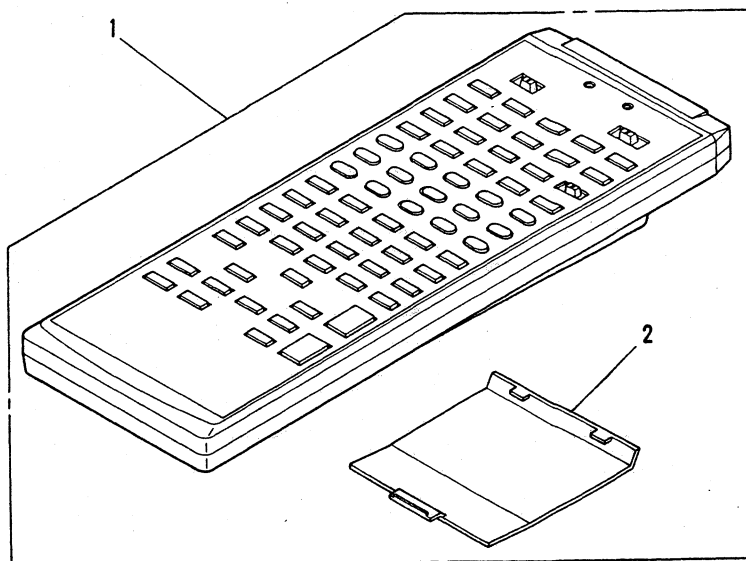
8. PACKING



Mark	No.	Parts No.	Description
	1	AHA1020	Front pad
	2	AHA1021	Rear pad
	3	AHD1288	Packing case
	4	AXD1026	Remote control Unit
	5	ARB1085	Operating instruction
	6	ADE1031	Connection cord

9. REMOTE CONTROL UNIT

Mark	No.	Parts No.	Description
	1	AXD1026	Remote control Unit
	2	AZH1035	Case (C)



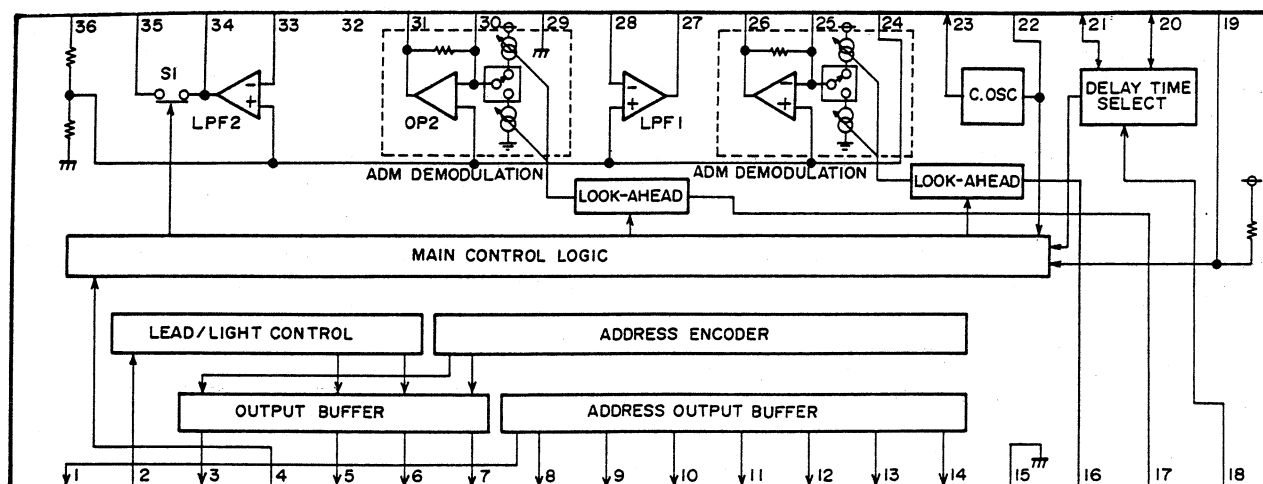
10. IC DESCRIPTIONS

PD5059

Terminal No.	Terminal Symbol	Input/Output	Description of Terminal
1	V _{DD}	—	+5V power supply.
2	P6-7	OUTPUT	N.C.
3	P6-6		Superimposed output. (chip select)
4	P6-5		Superimposed output. (clock)
5	P6-4		Superimposed output. (data)
6	P6-3		N.C.
7	P6-2		Output for CX1120P and CX-789 (clock)?
8	P6-1		Output for CX1120P and CX-789 (data)?
9	P6-0		Surround mode output. (simulated)
10	P4-7		Surround mode output. (DOLBY)
11	P4-6		Surround mode output. (stadium)
12	P4-5		Output for CX1120P(strobe)?
13	P4-4		Delay time mode output*
14	P4-3		
15	P4-2		TC9163N output (strobe).
16	P4-1		
17	P4-0		CX-789 output (strobe).
18	P3-7		VCR2 REC output control.
19	P3-6		VCR1 REC output control.
20	P3-5		Mute signal output.
21	P3-4		Simulated stereo mode signal output.
22	P3-3		Super bass mode signal output.
23	P3-2	INPUT	Remote control signal input.
24	P3-1	OUTPUT	PD0012A output. (chip enable)
25	P3-0	INPUT	Input for changeover between VSA-910 and VSA-700.
26	$\overline{\text{INT1}}$		AC pulse input.
27	CNVSS	—	GND
28	RESET	OUTPUT	RESET input.
29	XI		Terminal for connection of ceramic oscillator.
30	XOUT		
31	ϕ		Timing clock output.
32	VSS	—	GND

Terminal No.	Terminal Symbol	Input/Output	Description of Terminal
33	P5-7	—	N.C.
34	P5-6	INPUT	Key matrix input.
35	P5-5		
36	P5-4		
37	P5-3		
38	P5-2		
39	P5-1		
40	P5-0		
41	P1-7	OUTPUT	N.C.
42	P1-6		Surround switch input.
43	P1-5		N.C.
44	P1-4	OUTPUT	Power relay output.
45	P1-3		RF modulator output.
46	P1-2	INPUT	Rotary encoder input (for volume).
47	P1-1		N.C.
48	P1-0		
49	P0-7	OUTPUT	Superimposed input. (VIDEO)
50	P0-6		FL display output (BLK).
51	P0-5		FL display output. (chip enable No. 3).
52	P0-4		FL display output. (chip enable No. 2)
53	P0-3		FL display output. (chip enable No. 1)
54	P0-2		FL display and PD0012 output (clock).
55	P0-1	INPUT	FL display and PD0013 output (data).
56	P0-0		N.C.
57	P2-7		TC9163N output (clock).
58	P2-6		TC9163N output (data).
59	P2-5		Key matrix.
60	P2-4		
61	P2-3		
62	P2-2		
63	P2-1		
64	P2-0		

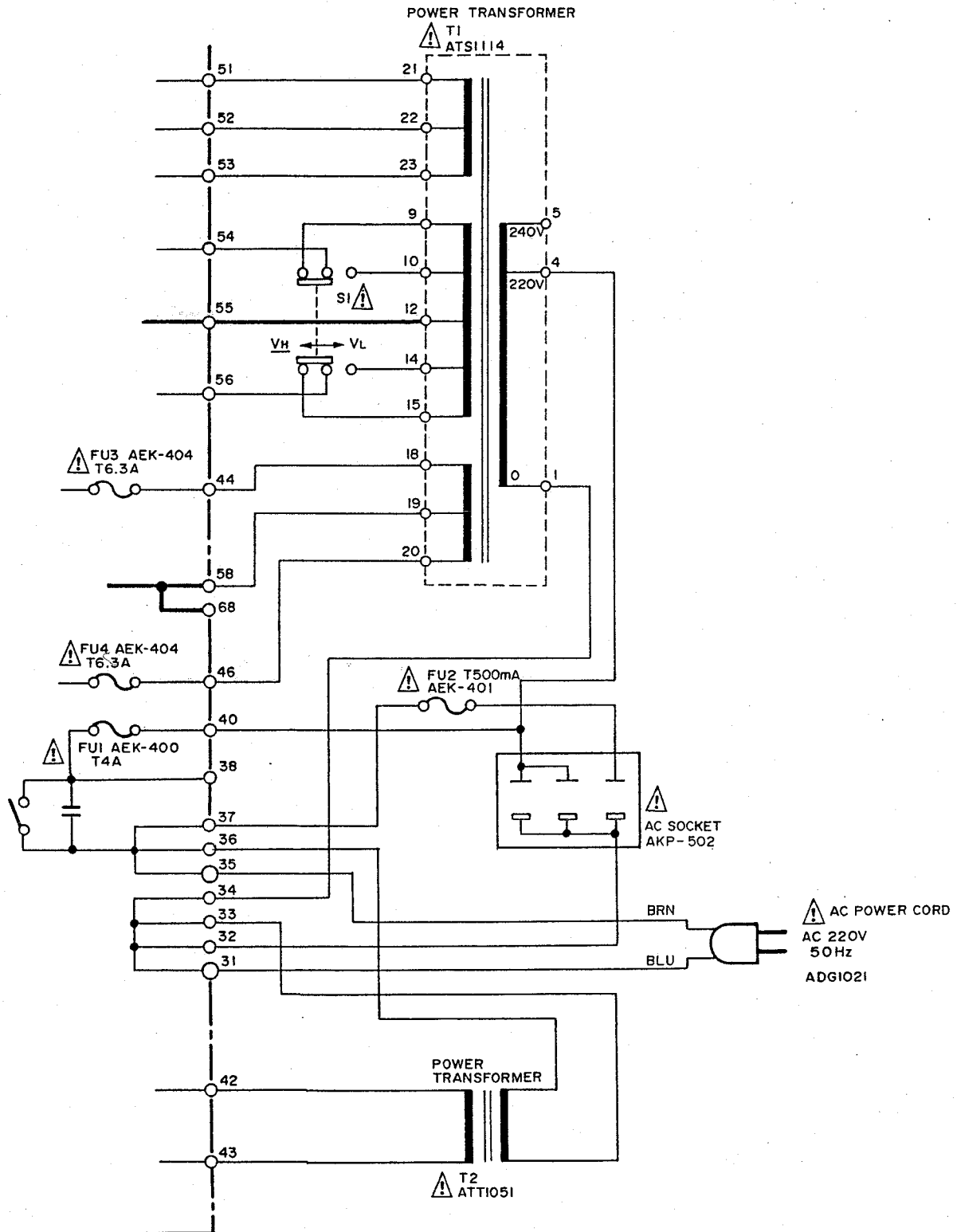
M5019SP



Terminal No.	Terminal Symbol	Description of Terminal	
1	A6	Address 6 output terminal.	
2	MD1	Memory data input terminal.	
3	CAS	Terminal for column address storebe output.	
4	RESET	Reset input terminal: RESET "L"	
5	DO	Data output terminal.	
6	W	Write control output terminal.	
7	RAS	Terminal for row address strobe output.	
8	A0	Address 0 output terminal.	
9	A2	Address 2 output terminal.	
10	A1	Address 1 output terminal.	
11	A7	Address 7 output terminal.	
12	A5	Address 5 output terminal.	
13	A4	Address 4 output terminal.	
14	A3	Address 3 output terminal.	
15	D · GND	Digital GND.	
16	CC1	Current control 1	Nontransmission of signals : 0.7V
17	CC2	Current control 2	
18	SHORT	Short terminal H = 12.5 msc (delay time)	SHORT = 5V MIDD = 0V LONG
19	CDI	Comparator data input.	

Terminal No.	Terminal Symbol	Description of Terminal	
20	MIDD	Middle terminal H = 18.8mS	M = 5V S, L = 0V
21	LONG	Long terminal H = 25mS	L = 5V S, M = 0V
22	OSC OUT	Oscillator output terminal.	
23	OSC IN	Oscillator input terminal.	
24	REF	Reference terminal.	
25	OP1 IN	Input from operation amplifier 1.	
26	OP1 OUT	Output from operation amplifier 1.	
27	LPF1 OUT	Output from low pass filter 1.	
28	LPF1 IN	Input from low pass filter 1.	
29	A-GND	Analog GND.	
30	OP2 IN	Input terminal for operation ampli- fier 2.	
31	OP2 OUT	Output terminal for operation ampli- fier 2.	
32	N.C.	—	
33	LPF2 IN	Input terminal for low pass filter 2.	
34	LPF2 OUT1	Output terminal 1 for low pass filter 2.	
35	LPF2 OUT2	Output terminal 2 for low pass filter 2.	
36	Vcc	Power terminal.	

● FOR VSA-700/H TYPE



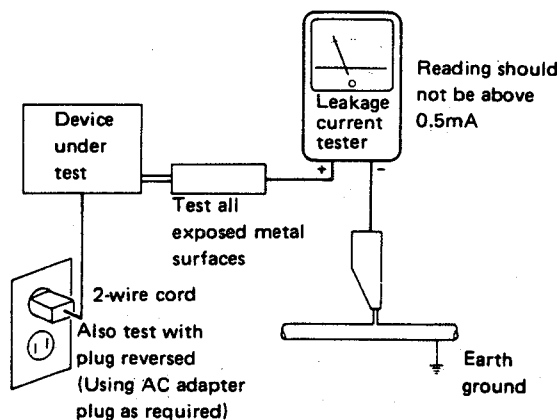
12. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.